

REMARKS

I. Status of Claims

Claims 13-32 are pending in the application. Claims 1-12 were previously canceled without prejudice to and/or disclaimer of the subject matter therein. Claims 13 and 23 are independent and currently amended. Support for the additional language of claims 13 and 23 can at least be found in FIG. 7. Claim 32 is newly added.

Claims 13-16 and 23 stand rejected under 35 USC 102(b) as allegedly being anticipated by Harndorf et al. (PCT Publication No. WO 02/38932) (“Harndorf”).

Claims 17, 20, 24, and 27 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Harndorf, as applied to claims 14, 15 and 16, respectively, above, in view of Tashiro et al. (USP 6,622,480) (“Tashiro”).

Claims 18, 19, 21, 22, 25, 26, and 28-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Applicant respectfully requests reconsideration of these rejections in view of the following remarks.

II. Allowable Subject Matter

Claims 18, 19, 21, 22, 25, 26, and 28-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

III. Pending Claims

Independent claims 13 and 23, the only the independent claims, stand rejected under 35 USC 102(b) as allegedly being anticipated by Harndorf.

The Applicant respectfully submits that claim 13 is patentable over Harndorf at least because it recites, “...the mode change section changes the heating mode when the estimated accumulation amount is within the mode change range from a normal heating mode, for heating

the exhaust purification apparatus by continuously keeping the air-fuel ratio in the exhaust system low, to a burn-up heating mode, for burning up the particulate matter by intermittently lowering the air-fuel ratio in the exhaust system so that a temperature of a catalyst bed is elevated so that the temperature of the catalyst bed is higher in the burn-up heating mode than in the normal heating mode.”

The Applicant respectfully submits that claim 23 is patentable over Harndorf at least because it recites, “...intermittently lowering the air-fuel ratio in the exhaust system by intermittently adding fuel to the exhaust when the estimated accumulation amount is less than or equal to the determination value so that a temperature of a catalyst bed is elevated so that the temperature of the catalyst bed is higher in the burn-up heating mode than in the normal heating mode.”

The Office Action alleges that Harndorf discloses “...the mode change section changes the heating mode when the estimated accumulation amount is within the mode change range from a normal heating mode (second phase), for heating the exhaust purification apparatus by continuously keeping the air-fuel ratio in the exhaust system low, to a burn-up heating mode (third phase), for burning up the particulate matter by intermittently lowering the air-fuel ratio in the exhaust system.” (emphasis added). See page 3 of the Office Action.

However, the Applicant respectfully submits that Harndorf is silent on the change of the heating mode to the burn-up heating mode, for burning up the particulate matter by intermittently lowering the air-fuel ratio in the exhaust system so that a temperature of a catalyst bed is elevated so that the temperature of the catalyst bed is higher in the burn-up heating mode than in the normal heating mode. Rather, the third phase of Harndorf is performed to prevent decrease in the (catalyst) temperature curing the regeneration process. See col. 7, lines 22 to 25 of Harndorf. The Applicant respectfully submits that this implies that the catalyst temperature decreases in periods of the third phase in which fuel addition is suspended. Therefore, the third phase of Harndorf cannot burn up the particulate matter in the exhaust purification apparatus during periods in which fuel addition is suspended as required by the Applicant’s claims.

Unlike Horndorf, the burn-up heating mode of certain embodiments of the present invention elevates the temperature of the catalyst bed. The temperature of the catalyst bed in the burn-up heating mode is higher than that in the normal heating mode. See Fig. 7. More specifically, the temperature of the catalyst bed in the periods (t21-t22, t23-t24, t25-t26 in Fig. 7) in which fuel addition is suspended in the burn-up heating mode is higher than that in the normal heating mode (before t20 and after t26 in Fig. 7). Therefore the burn-up heating mode of certain embodiments of the present invention can burn up the particulate matter in the exhaust purification apparatus even in said periods (t21-t22, t23-t24, t25-t26 in Fig. 7) in which fuel addition is suspended.

Furthermore, the Office Action alleges that Harndorf discloses "...the mode change range is set in accordance with a comparatively small estimated accumulation amount...when a determination that the regeneration of the filter has just begun...only a small amount of particulate matter in the filter is combusted." See page 3 of the Office Action.

In certain embodiments of the present invention, the mode change range is a range in which a small amount of particulate matter remains accumulated in the exhaust purification apparatus. In other words, the mode change range represents a condition in which most of the particulate matter accumulated in the exhaust purification apparatus has already been removed. Thus, the Applicant respectfully submits that certain embodiments of the present invention are further distinguished from Harndorf.

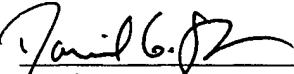
The Applicant respectfully submits that, for at least these reasons, claims 13 and 23, as well as their dependent claims, are patentable over the cited references.

IV. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance. The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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